



Chemical Reactions

Unit
1

عشان تعرف تشتغل علي اي **Chemical equation** لازم تكون عارف كام حابه :

Ex:-



Metal (+)

non-metal (-)

1- اي **Compound** عبارة عن **2 Parts**

2- اي **Compound** يحصله **Decomposition** بيكون ما بين الـ **positive (metal)**

و الـ **negative (non-metal)**

3- اي **Compound** اوله **H⁺** يبقّي **Acid**

4- اي **Compound** اخره **OH⁻** يبقّي **(Alkali) Base**

5- اي **Compound** ثاني معندوش **H⁺** ولا **OH⁻** يبقّي **Salt**

6- أول ما تشوف **CO₃⁻²** يطلع **(CO₂)**
(Carbonate)

7- اول ما تشوف **H, O** يطلع **H₂O**

(Neutralization reaction)



9- الـ **Colors** مهمة جدا جدا

10- لازم تكون عارف ان

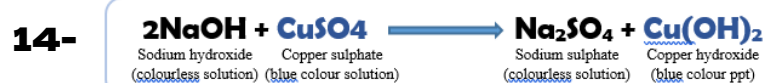
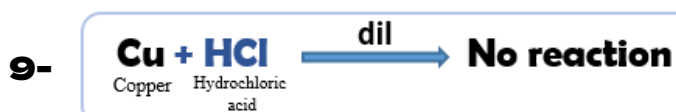
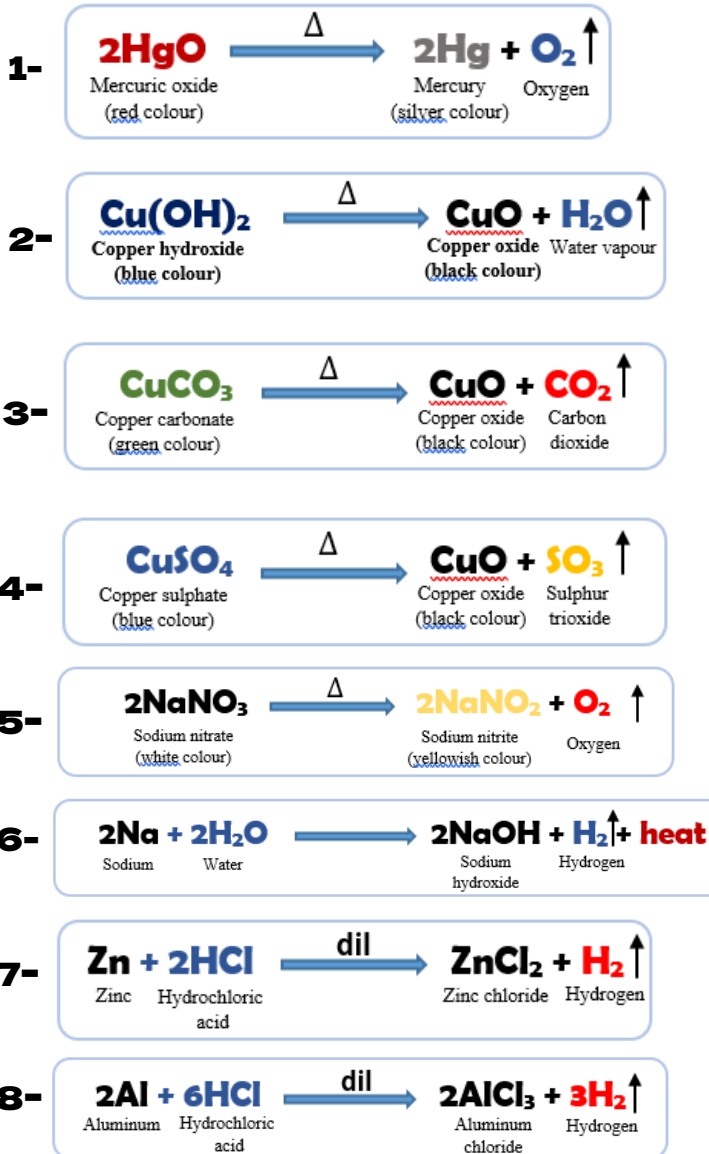
O₂ → don't burn, but help in burn

Co₂ → don't burn, and don't help in burn

H₂ → produce pop sound

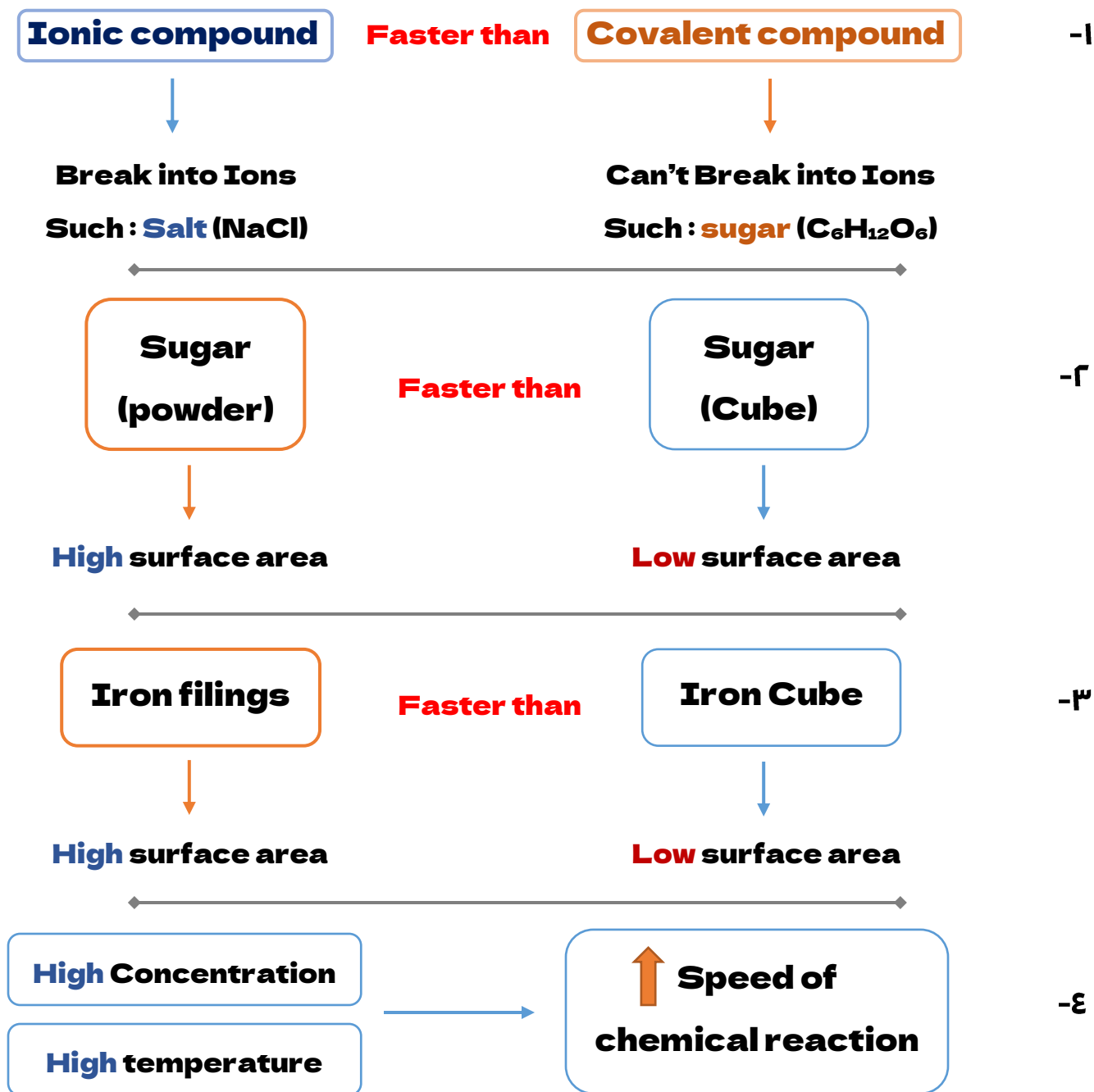


Chemical Equation:





لو عاوز تفهم ال **Speed of chemical reaction** :-



- The number of probable collision between molecules **increase** .

- لو التركيز زاد أو الحرارة زادت التصادم بين ال **Molecules** هيزيد و التفسير هيزيد و ال **Speed** هتزيد



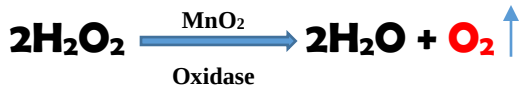
Catalyst

Manganese dioxide

-0

Enzyme

Oxidase enzyme in sweet potato



Reaction

Product

Start of reaction

100%

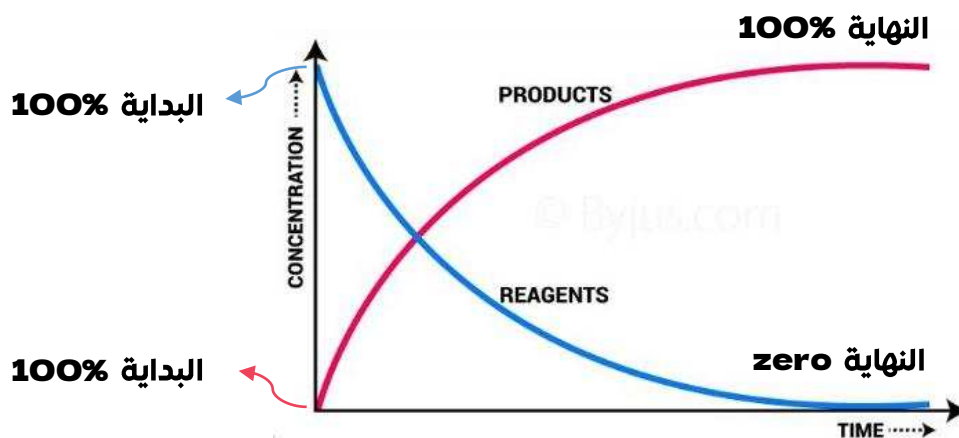
0%

-1

End of reaction

0%

100%





Electric Energy and Radioactivity

Unit
2

The Electric circuit

Flow of electric negative charge

مرور شحنات سالبة

1-

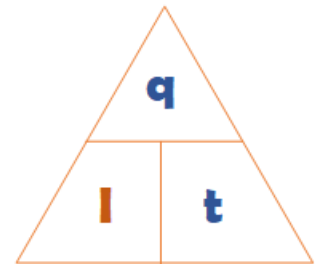
$$\text{Current intensity (I)} = \frac{\text{Quantity of charge (q)}}{\text{Time in seconds (t)}}$$

شدة التيار

$$I = \frac{Q}{T}$$

$$1 \text{ Ampere} = \frac{1 \text{ Coulomb}}{1 \text{ Second}}$$

I = Current intensity (Ampere)
Q = Quantity of charge (Coulomb)
T = Time (Sec.)



- **Intensity** is **inversely** proportional to **time**

- **Intensity** is **directly** proportional to **quantity**

Ammeter

Used to measure the intensity .

Symbol: (A)

Connected: **series**

Not connected directly to battery

2-

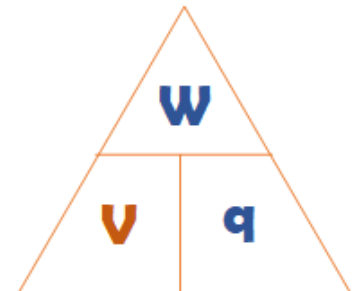
$$\text{Potential diff (V)} = \frac{\text{Work (W)}}{\text{Amount (quantity) of charged (q)}}$$

فرق الجهد

$$V = \frac{W}{Q}$$

$$1 \text{ Volt} = \frac{1 \text{ Joule}}{1 \text{ Coulomb}}$$

V = Potential diff. (Volt)
W = Work (Joule)
Q = Quantity of electric (Coulomb)





- Potential diff is **inversely** proportional to **quantity**

- Potential diff is **directly** proportional to **work**

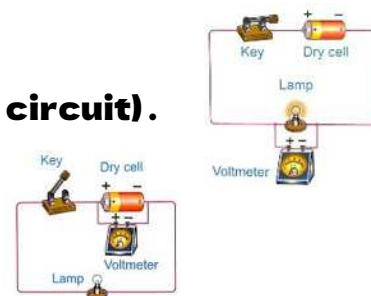
Voltmeter

Used to measure potential diff (closed circuit).

Used to measure *e.m.f* (open circuit).

Symbol: $\textcircled{V}$

Connected: **Parallel**



3- **Resistance** - هو الاعتراض داخل ال Conductors لل electric current

- **device**: Ohmmeter

- **units**: Ohm

- **fixed resistance**:

- **Variable resistance (sliding Rheostat)**:

خد بالك :-

- Resistance **increase** by **increasing** the length of conductor and current intensity **decrease**.

Ohm's law:

$$V = IR$$

- هو Ohm قال ايه ؟

- $V \propto I$, $V = \text{constant} \times I$

$$V = R \times I$$



Alternating electric current (A.C)

1- Variable intensity .

2- Variable direction .

3- transferred for short distance and long distance .

4- Can convert into D.C

5- Used in :

- **Lighting house and street .**
- **Operating electric appliance .**

6- Ex :- Dynamo

Direct electric current (D.C)

1- Constant intensity .

2- unidirectional .

3- transferred for short distance .

4- Can't convert into A.C

5- Used in :

- **Electroplating process .**
- **Operating some electric appliance .**

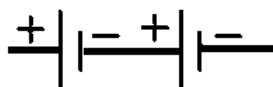
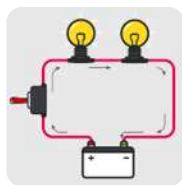
6- Ex :- electrochemical cell .



- خد بالك عندي Two method

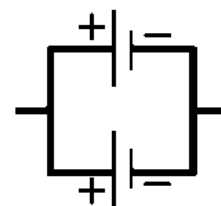
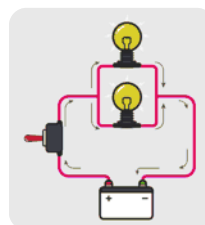
Series

$$E_{(battery)} = E_1 + E_2 + E_3 + \dots$$



Parallel

$$E_{(battery)} = E_1$$



لو عاوز تفهم ال electricity :-

١- حفظ القوانين .

٢- تركز علي units زي Ampere , Volt , Ohm

٣- كلمة Conductor يعني Wire .

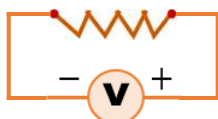
٤- كلمة cell يعني Battery .

٥- لما تشوف A يعني Ammeter + لو لقيت رقم يبقي ده رقم ال intensity .

٦- لما تشوف V يعني Voltmeter + لو لقيت رقم يبقي ده رقم ال potential diff .



٧- ال Ammeter بيتوصل Series



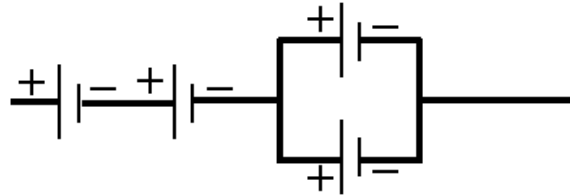
٨- ال Voltmeter بيتوصل Parallel



٩- لما تشوف  يعني Lamp

١٠- لما تشوف  يعني (Sliding Rheostat)

١١- لما تيجي رسمة زي كده :



إحسب ال Parallel الأول و بعد كده احسب ال Series

$$E_{(battery)} = \text{Series} + \text{Parallel}$$



Genes and Genetics

Unit
3

Hereditary traits

Traits transmitted from parent to off spring .

Skin colour
Hair colour
Blood group

Acquired traits

Traits that aren't transmitted parent to off spring .

Walking
Swimming
Writing

- ليه Mendel اختار الPea plant :-

- 1- easy to be planted & grow fast .
- 2- life cycle is short . **عندها (Male+female)**
- 3- flowers are hermaphrodite , so it can be self pollinated .
- 4- can be easily artificially pollinated . **تلقيح ذاتي**
- 5- produce large number of plants in a generation .
- 6- it has several pair of easily recognized contrasting trait .
(عندها زوج من الصفة و عكسها)



نركز بقا؟



هو Mendel عمل إيه؟

١- Mendel اختار ببسلة **Green seed** و **yellow seed** .

٢- Mendel جوز الببسة الـ **yellow seed** للببسة الـ **yellow seed** و جوز

الببسة الـ **green seed** للببسة الـ **green seed** .

* طب هو ليه عمل كده؟

- To be sure of purity of this trait .

٣- Mendel بعد ما تأكد إن الـ **yellow seed** هيطلع **yellow seed**

و الـ **green seed** هيطلع **green seed** , قالك ما نجوز

الـ **green seed** للـ **yellow seed** و نشوف هيطلع ايه .

بس خد بالك :-

- Mendel شال الجزء الذكري من الزهرة

- Remove stamen of yellow or green seed .

* طب ليه عمل كده؟

علشان يمنع الـ **Self pollination**

- و غطي الجزء الأنثوي من الزهرة

- Covered the stigma of yellow or green seed .

* طب ليه عمل كده؟

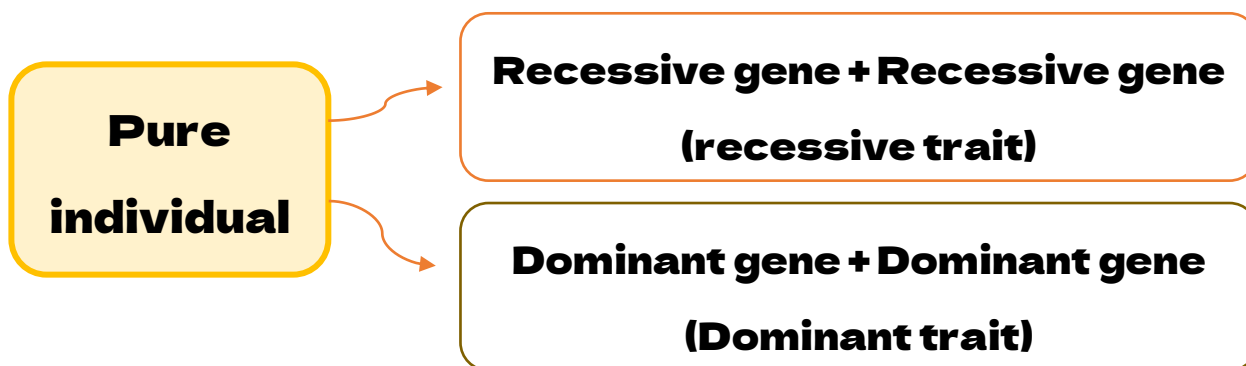
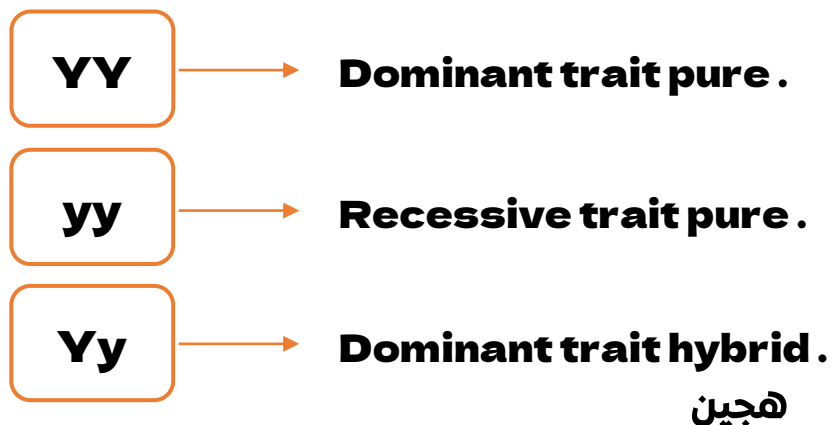
علشان يمنع الـ **Cross pollination**



طلع ايه بقي؟

- Frist generation : **100% hybrid yellow** .- Second generation : **75% yellow : 25% green** .

* بص بقي يا ولدي :-

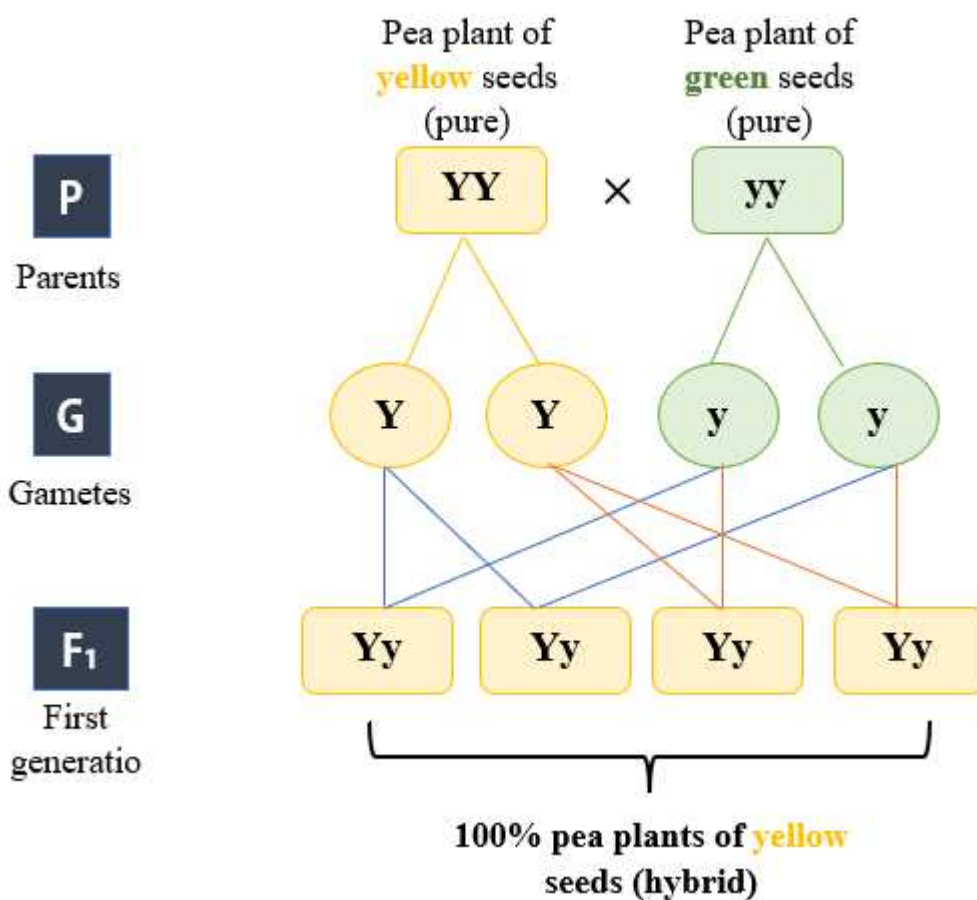
- ان ال F_1 يطلع **100% yellow hybrid** ده معناه ان فيه صفه بتكسب صفه .ال **Dominant trait (yellow)** بتكسب ال **Recessive trait (green)**- Pair of genes are similar either **dominant** or **recessive**- أي Trait بتكون من **2 Genes** .- ال **Dominant gene** or **Recessive gene** بقول عليه **Hereditary factor**

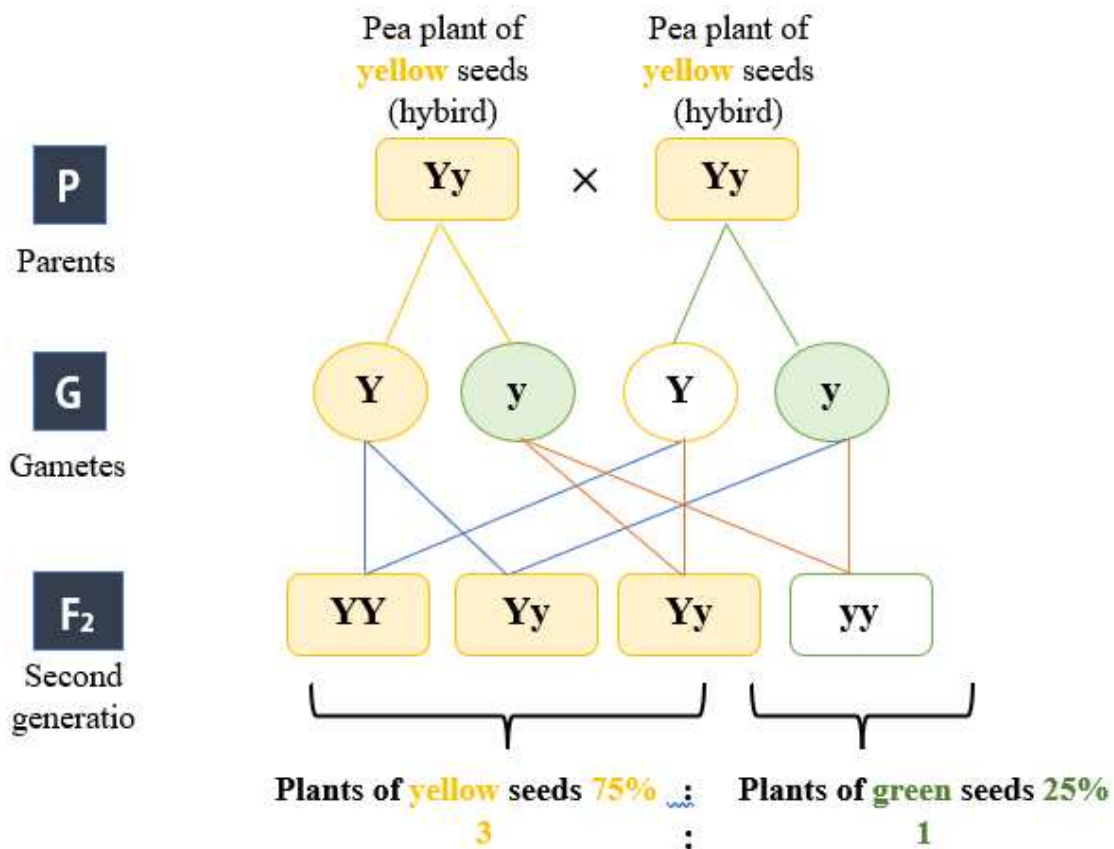


Mendel's first law

Law of segregation

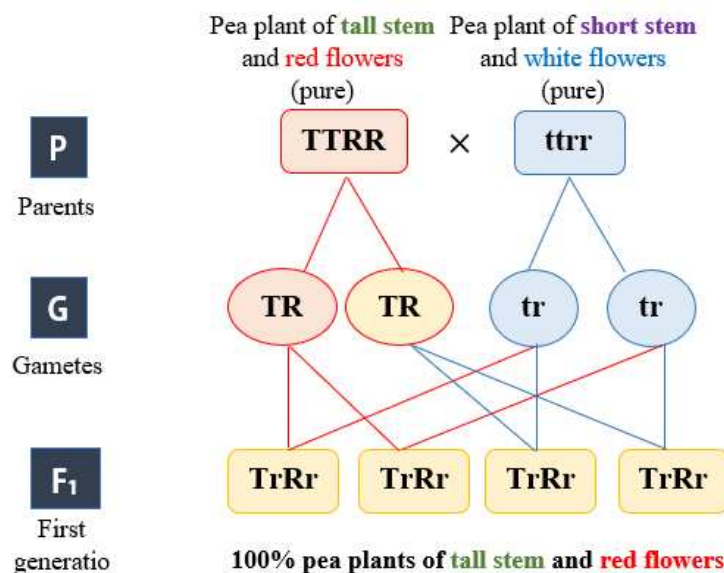
Gametes (هفرقهم) عشان اكون **Segregate**

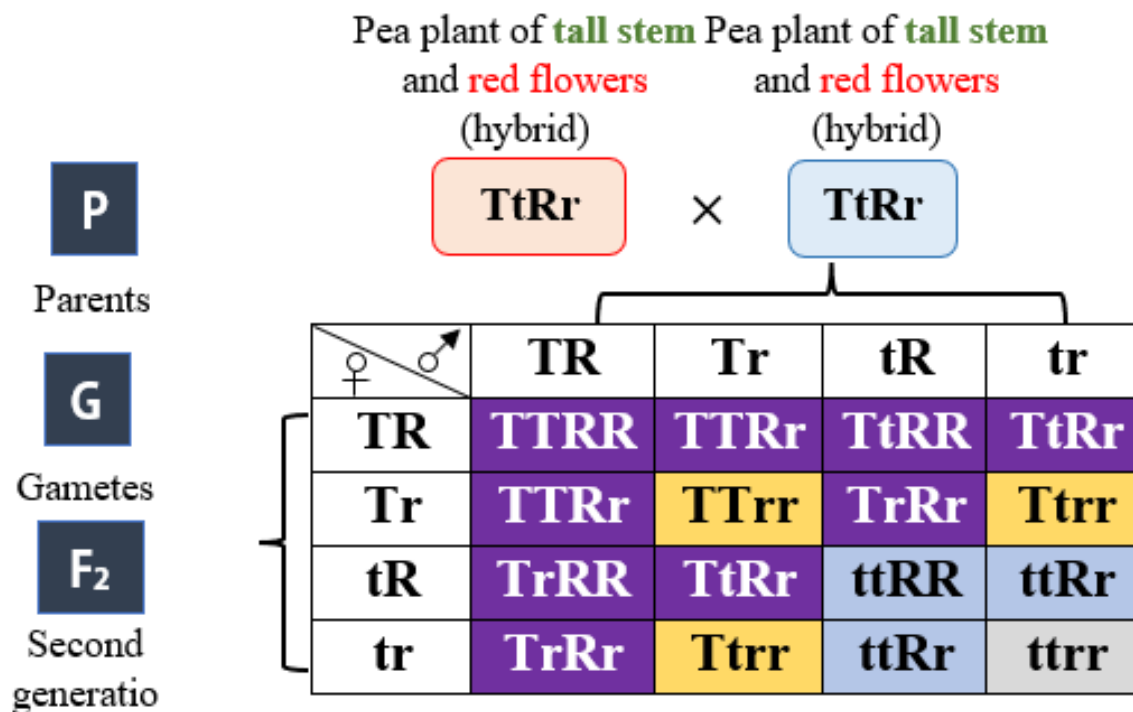




Mendel's Second law

Law of independent assortment of Hereditary factor



تعالوا نعمل الـ F_2 لو انت اونلاين هتلاقيها علي **YouTube**

- The traits of individuals of second generation :

Tall stem & red flowers	Tall stem & white flowers	Short stem and red flowers	Short stem and white flowers
9	3	3	1

Watson & Crick**Make a model of DNA****Badel & Tatum****Discovered means of how genes control the appearance of genetic trait.**



Hormones

Unit
4

Gland	Hormones	Functions
Pituitary	Growth hormone	Promotes the growth of the body as a whole where it controls The speed of growth rate of : - The muscles . – The bones . - Other organs .
	Thyroid stimulating Hormones	Stimulates thyroid gland to secrete thyroxin and calcitonin hormones .
	The activating hormones of sexual glands	-Regulates the growth and the development of sex organs . -Activates the sexual glands to Secrete their hormones prior to adulthood stage .
	Adrenal glands Activating hormone	Activates the two adrenal glands To secrete adrenalin hormone .
	Mammary glands Activating hormone	Activates the mammary glands To secrete milk during breast feeding process .
Thyroid	Thyroxin hormone	Liberates the energy necessary for the body from food .
	Calcitonin hormone	Controls the calcium level in the blood .



Gland	Hormones	Functions
Adrenal	Adrenalin hormone	Stimulates body organs to respond to emergencies .
Pancreas	Insulin hormone	Stimulates the storage of glucose sugar in liver (when the glucose level increases in the blood)
	Glucagon hormone	Stimulates the release of glucose sugar from the liver (When the glucose level decreases in the blood) .
The two ovaries	Estrogen hormone	Enables the female secondary sex characters to appear .
	Progesterone hormone	Promotes the growth of endometrium .
The two testes	Testosterone hormone	Enables the male secondary sex characters to appear

موقع الدكتور محمد رزق التعليمي



امسح الباركود بالموبيل لتثبيت
التطبيق وتحميل كل الملازم مجاناً وبسرعة



حمل التطبيق الآن



كورسات ونتائج امتحانات



ملازم ثانوي



ملازم اعدادي



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